IEEE P802.20

Mobile Broadband Wireless Access

Project	IEEE P802.20 Working Group for Mobile Broadband Wireless Access (MBWA)
Title	**Coexistence Outline for the 802.20 Standards Project**
Date Submitted	July 22, 2003
Source	Jim Tomcik jtomcik@qualcomm.com
Re:	802.20 Technical Requirements and Evaluation Criteria
Abstract	This contribution is presented as support for the Coexistence Correspondence Group
Purpose	The intent of this contribution is to continue defining a framework for coexistence activities within 802.20. The author requests that 802.20 discuss and affirm the inclusion of coexistence as part of the 802.20 workplan.
Notice	This document has been prepared to assist the IEEE P802.20. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.20.

Coexistence Outline for 802.20

Jim Tomcik
jtomcik@qualcomm.com

Coexistence – "Second" Thoughts

- Where does Coexistence "Fit" In the 802.20 Project?
  - Initially Thought to be a Requirements Issue
  - Is it part of Evaluation Criteria or Requirements?
  - Conclusion: Coexistence Considerations Cuts Across All Phases of the 802.20 Project
- Coexistence is a "Charged" Term with 2 "Definitions"
  - Guides/Reports/Practices on Minimum Performance and Deployment Considerations
    - Examples: 802.16.2, TSB84A
    - Typically Produced AFTER the Technology is Selected and Nearly Standardized
  - An Approach and Study to
    - Define "Typical" Deployment Scenarios to be Used for Comparisons
    - Evaluate Technologies from an Interference Robustness Viewpoint, and
    - Define RF Parameters in Specification Development

Coexistence and Regulation

- Q: Isn't Coexistence Defined by Administration Regulations?
- A: Yes and No!!
  - Coexistence of Different Licensed "Radio Services" IS Defined by Administrations
    - Spectral Block Allocations to Services
    - Block Edges, Out-of-Block Emissions and
    - Interference between Different Radio Services in the Large Sense (I.e. Spurious Emissions)
  - Coexistence of Channels Carrying Different Technologies Within a Block IS NOT Defined by Administrations
    - Examples Include Adjacent Channel Deployments of GSM and UMTS, for Example
      - Characteristics:
        - Vastly Different Technologies (such as GSM and WCDMA)
        - Often Deployed by the Same Operator
        - May be Co-Deployed, and May Share an Antenna in a BTS
        - Mobiles May be Multi-Mode Operational

Coexistence Standards References

- Deployment Guides:
  - IEEE 802.16.2-2001 Recommended Practice:Coexistence of Fixed Broadband Wireless Systems
  - TIA TSB84A (Telecommunications Systems Bulletin) – Licensed PCS to PCS Interference
- Other Coexistence Documents
  - 3GPP
    - TR 25.942 (Technical Report): Radio Frequency System Scenarios (Release 6)
      - Defines Coexistence Scenarios
      - Develops Comprehensive Methodology(ies) for Coexistence Studies
- GSMA:
  - GSM 05.50 Version 8.2 (1999) Technical Report: Background for Radio Frequency Requirements
- T1P1.2: UMTS at 850Mhz Project

Minimum Performance Standards

- GSM: GSM 05.05
- ITU-R: F.1509 (Recommendation)
- CDMA Base Stations: EIA-97
- CDMA Mobiles: EIA-98
- Japan, Korea have Similar

Coexistence and 802.20 Standard

- Coexistence Simulation Plays a Role in Standard Development
- Simulations Can Be Used as a Tool to:
  - Define the RF Parameters Needed for the Standard
- Examples:
  - Spectral Emission Masks
  - Transmit Power Limits
  - Other Items

Outline for Action

802.20 Coexistence Requirements

- 802.20 Requirements are Setting the “Bounds” for Technology Proposals for MBWA
- Coexistence Requirements Outline
  - Define Coexistence Scenarios to be Simulated in Proposals
    - Define Several Baseline Coexistence Scenarios
    - Provides a basis for Comparison of Technologies
    - FDD and TDD in Adjacent Blocks
    - TDD and FDD in Same Block
  - Define Performance Parameters to be Reported
    - For example: Maximum Transmit Power, Masks, Sensitivity
  - Define Minimum Performance Levels to be Demonstrated

Coexistence Evaluation Criteria

- Evaluation Document Defines the Details
  - Detailed Deployment Layouts for Simulations
  - Simulation Methods to be Used
    - Many Accepted References on This
  - Simulation Scenario Parameters
  - Worst Case RF/Channel Models to be Used

Summary and Next Steps

- Restore a Section on Coexistence in the System Requirements Document
- Define the Details in the Evaluation Criteria Document
- Address Coexistence in a Minimum Performance Standard for 802.20
- Develop Deployment Guidelines to Facilitate Coexistence